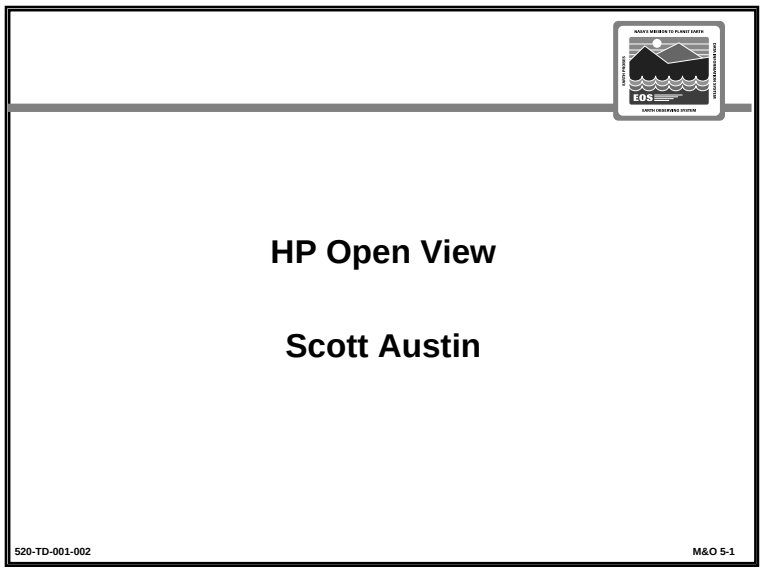


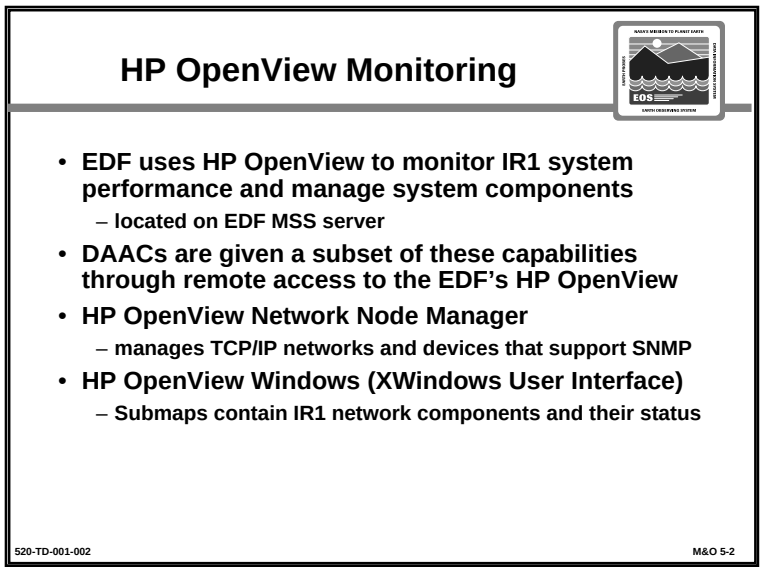
Discussion Topics

- Ir1 system performance management is based on the HP OpenView product which includes the HP OpenView Network Node Manager and HP OpenView Windows.
- This lesson is designed to show you what is available and not available to you for Ir1.

References:

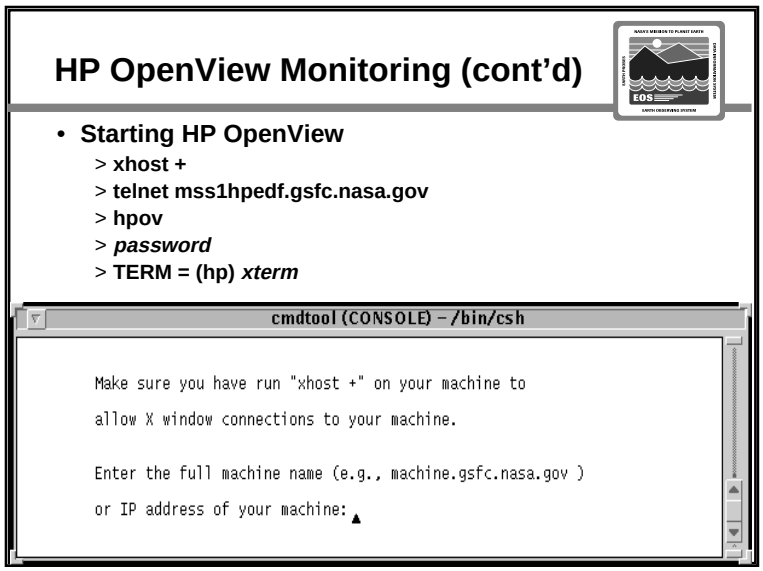
HP OpenView Network Node Manager User's Guide, Hewlett Packard Co., 1993

609-CD-001-001 *Interim Release One (IR1) Maintenance and Operations Procedures*



Discussion Topics

- Ir1 provides capabilities for monitoring Ir1 system performance and for managing system components. The overall management and monitoring of Ir1 is based at the EDF. The DAACs are given access to a subset of these capabilities, via the EDF, to demonstrate functions that will be available in future releases of ECS.
- The **Network Node Manager** employs a manager system on the EDF MSS Server to perform management operations on the Ir1 network. It manages TCP/IP networks and devices that support the Simple Network Management Protocol (SNMP). The following system performance management capabilities are available at the EDF:
  - the capability to display the entire Ir1 network configuration and network fault status
  - the capability to display the status for Ir1 components at the site, computer, device, and process level
  - the capability to monitor system performance and diagnose performance problems
  - the capability to generate and extract reports on system performance
  - the capability to alert the operations staff of Ir1 system problems that occur anywhere in the network via pop-up windows. Detailed messages are stored in the HP OpenView Event Log.
  - the capability to login to Ir1 computer hosts directly from the monitoring displays
- **HP OpenView Windows** provides an X Windows user interface to the functions provided by the Network Node Manager.
- System monitoring and management is performed using a set of submaps displayed in single windows by the HP OpenView Windows user interface. Each submap shows a set of related symbols that individually represent a component of the Ir1 network. The color of each symbol indicates the status of the component. The symbol also represents a "child" submap for that component. Child submaps are displayed by double-clicking on the symbols.



Discussion Topics

- To start HP OpenView (read-only) from any DAAC site, issue the following UNIX commands:

> **xhost +**

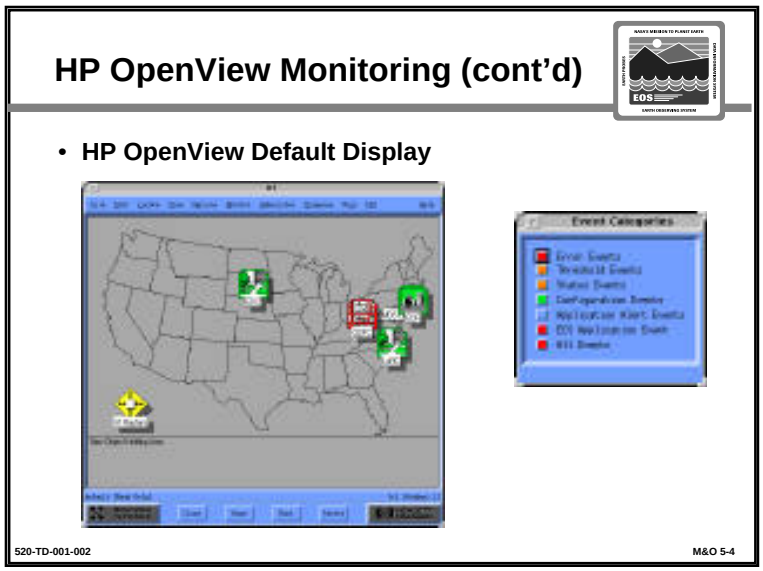
> **telnet mss1hpedf.gsfc.nasa.gov**

> **hpov** (this is the login id)

> ***password***

> **TERM = (hp) *xterm*** (this depends on the machine being used)

- This will open a window which will prompt you for the machine name or its IP address (if you enter incorrectly, you will receive an error message)



Discussion Topics

- After executing this command, the DAACs will have a default map displayed that depicts the IR1 network, and an *Event Categories* window will open up. On-line help is available from all menus, and is very extensive in content. It is suggested that a person check here first for more information about unexpected messages or warnings that may be encountered.
- **Main Screen Menu Bar**. Because DAACs have read-only access, the following are the only Main Menu options on the default map screen that are available to DAACs in IR1:
  - *Edit* - only Submap ...Open/List is available (this provides a list of available submaps). All other choices under *Edit* are not available.
  - *Monitor*- all items are available. Checks for items such as: *MIB Browser* is used for checking MIB variables on the SNMP devices, showing what data is being collected at each particular host.
  - *Administrator* - Performs system management functions (only works on HP workstation)
  - *Diagnose* - allows you to check status of machines, e.g. connectivity
  - *ECS* - Note: there is a *Print* menu selection which is not available to DAACs. DAACs can use the ftp process to retrieve a report and print it to your own postscript printer. *Display Report:* a series report will be displayed. **Note: user will have to close the windows sequentially; otherwise the reports will continue to appear**
  - The *Home* button at the bottom of the screen will return the user to the Home Map (IR1 Map). *Root* will display the IP Internet symbol, and double clicking will yield the IP Internet submap.
- **Monitoring from an icon**. A second method of monitoring is available from the default map display by clicking directly on an icon for further information. Left button clicks are used to select an icon, right button clicks are used to display menu choices.

  From the main default map display, double clicking the DAAC icons will bring up the DAAC site map. Double-clicking the site level icon will display the network interface for the selected device.

HP OpenView Monitoring (cont'd)

- **Green** — **All devices are operating normally**
- **Blue** — **One component is operating in a warning/degraded condition**
- **Yellow** — **Multiple components are operating in a warning/ degraded condition**
- **Orange** — **One component is operating normally, all the rest are reporting abnormal conditions**
- **Red** — **All components are down, off-line, or inaccessible to the Network Node Manager**

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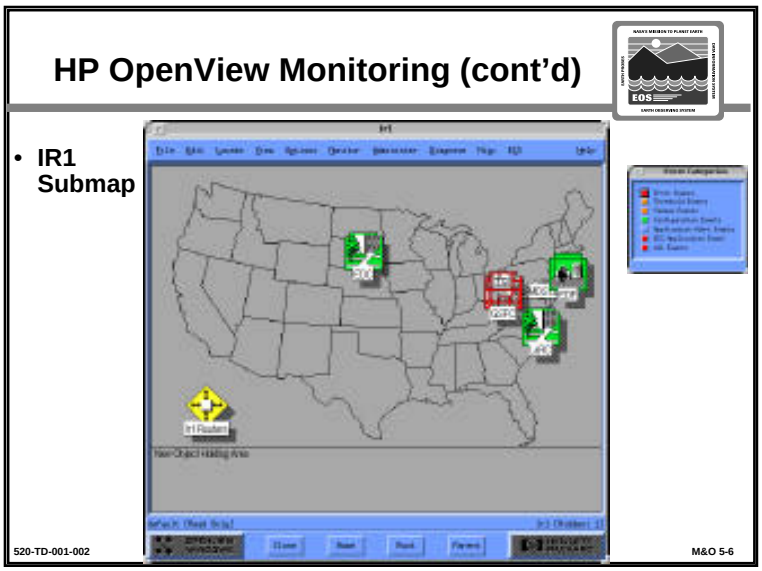
Discussion Topics

- All of the submaps show the status of various Ir1 system components by coloring the symbols that represent those components. The status associated with the colors is as follows:
  - **Green** — All devices represented by the symbol are operating normally
  - **Blue** — One component represented by the symbol is operating in a warning/degraded condition
  - **Yellow** — Multiple components represented by the symbol are operating in a warning/degraded condition
  - **Orange** — One component represented by the symbol is operating normally, all the rest are reporting abnormal conditions
  - **Red** — All components represented by the symbol are down, off-line, or are inaccessible to the Network Node Manager



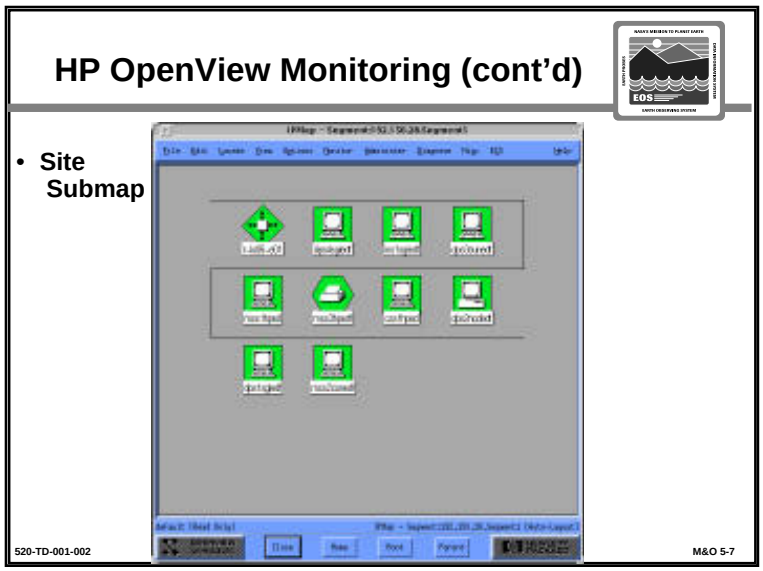
Discussion Topics

The Ir1 Submap and the Event Categories window are the first displays presented to the user. The IR1 submap shows a map of the U.S.A. with overlaid symbols representing

(1) the status of the various Ir1 sites, and

(2) a "router" symbol representing the Ir1 communications network.

- The Site Submap for a DAAC or the EDF can be displayed by double-clicking on the appropriate site symbol.
- The Internet Submap is displayed by double-clicking on the router symbol.
- The Ir1 Submap is the "home" submap and can be displayed from any of the other submaps by clicking on the Home button at the bottom of the submap window.



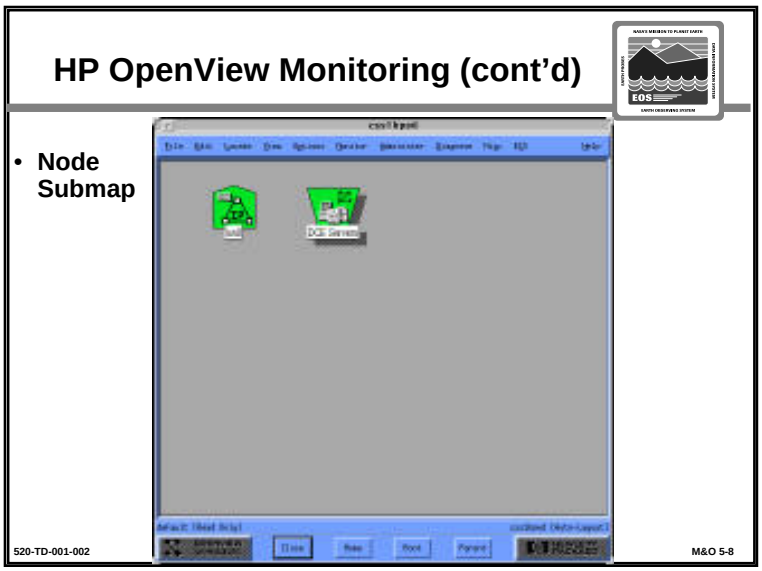
Discussion Topics

The Site Submap shows:

(1) the status of monitored computer nodes and printers at a selected site, and

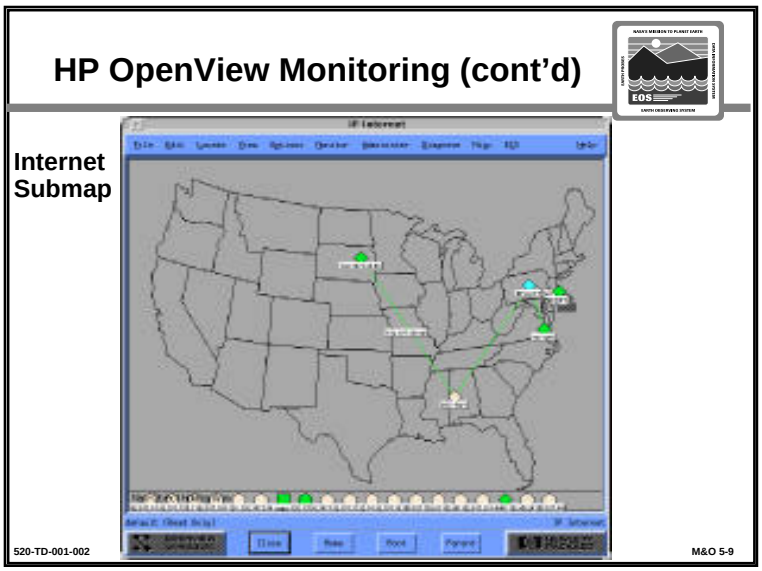
(2) the "router" symbol representing the Ir1 router at that site. Computer nodes are represented by symbols depicting a computer screen and keyboard.

- The Site Submap provides the capability to login to any computer node represented on the submap. The login is accomplished by highlighting an icon, then selecting Misc, /Terminal Connect /Telnet (xterm) from the menu bar.
- The Node Submap for any of the represented computer nodes can be displayed by double-clicking on the appropriate computer node symbol.
- If there is a problem, it will take about 5 minutes for the symbol color to change. When there is a problem, select *Diagnose* on the main menu, then *Network Connectivity*, then *Demand Poll* . Demand Poll checks the connection status in real-time. Note: once you check the status fo a problem, the color will immediately change on the Site Submap if it has not done so already.



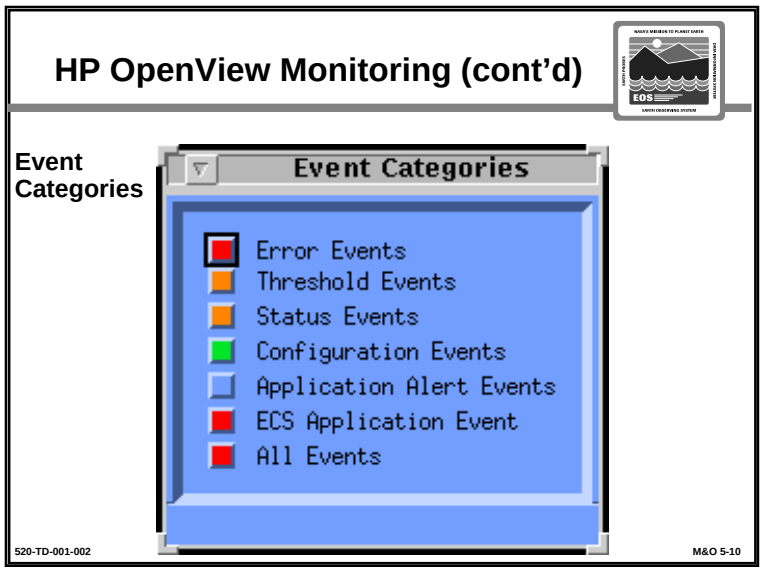
Discussion Topics

The Node Submap shows the status of the computer node's network interface and any monitored processes that run on that computer.



Discussion Topics

The Internet Submap is displayed by double-clicking on the router symbol on the IR1 submap. The Internet Submap shows a map of the U.S.A. with overlaid symbols representing the status of Ir1 communications links and "discovered" communication nodes.

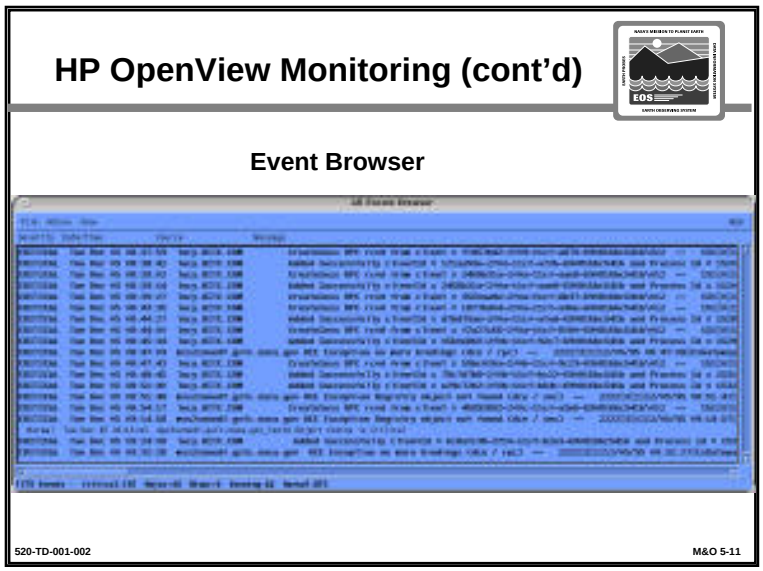


Discussion Topics

System Logs. The system logs are accessible through the *Event Categories* window that appears as part of the software startup. The *Event Categories* window should be kept running so event messages can be actively monitored. Closing this window will prevent some of the symbol status color updates (depends on the event) and event-generated popup notifications from being displayed. If the window is closed to conserve system resources it can be re-activated by choosing the menu item ***"Monitor ->Events: SNMP"***. There will be a short delay while re-activating this window as it updates information from the trapd.log.

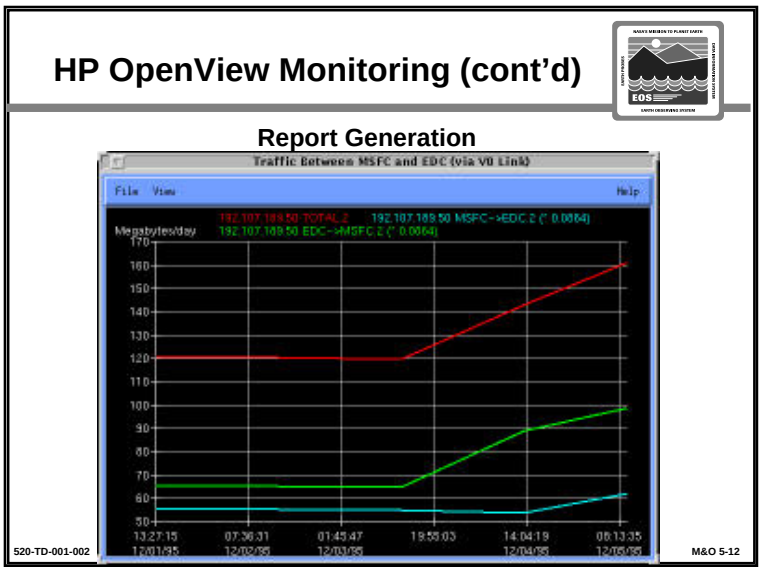
The window has a button corresponding to each of the Ir1 event categories. An Event Browser window is displayed for an event category when the operator clicks on the button for that category. The Ir1 event categories are shown below:

Error Events	Events that indicate that inconsistent or unexpected behavior occurred
Threshold Events	Events that indicate that a threshold was exceeded
Status Events	Events that indicate that the status of a component or interface has changed
Configuration Events	Events that indicate that a node's configuration has changed
Application Alert Events	Events that describe the status of the system performance management software
ECS Application Events	Events that describe the status of Ir1 applications
All Events	All events listed above



Discussion Topics

- The *Event Browser* window displays event messages that are issued from managed components of Ir1 and correspond to the category selected from the Event Categories window. The window displays the following for each event:
  - Severity
  - Date/Time
  - Source
  - Event Message
- The Source displayed for each event specifies the managed component that issued the event. The operator can display the submap corresponding to that component (if one exists) by double-clicking on the display line for that event.
- Filter Function. Of you are only interested in a particular event/host, select *View/Set Filters....* Under this selection, you can:
  - set severity level (e.g., critical, major, minor)
  - period of time
  - match source (pick machines that fit the same criteria)
  - search for message screen (looking for a particular event message)



Discussion Topics

Report Generation. The system performance management software has the capability to generate performance reports tailored to DAAC requirements. Types of reports that can be set up include:

– Disk utilization

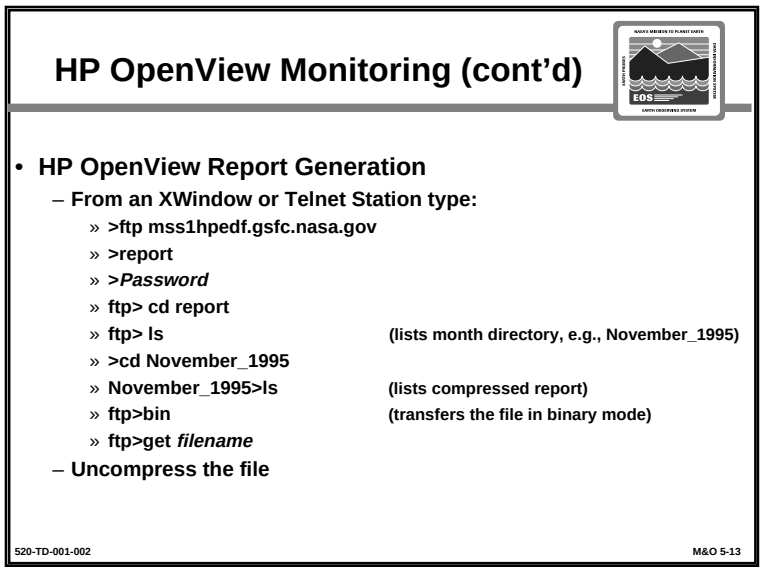
– Available free memory for a specified host

– Communication link traffic volume

– System up time

– CPU Utilization

To display a report, select ECS from the main menu, then Display Report. Remember, you must close all report display windows or the reports will continue to be generated.



Discussion Topics

- The output of these reports are saved in a compressed PostScript file format which reside in the report directory on the MSS Server.
- While it is the EDF administrator's responsibility to generate these reports, DAACs can FTP the PostScript file from the EDF machine back to the local DAAC's system disk space, then generate a hard copy version by sending the file to a printer with PostScript capabilities.
- These files are located under report directory, and are grouped according to the month and year of the reports, for example, ~report/November_1995.
- These files are compressed; remember to decompress them after ftp.